Granite Creek Culvert
Spanning Granite Creek, on Going-to-the-Sun Road
Glacier National Park
WEST GLACIER → Flathead County
Montana

HAER No. MT-77

HAER
MONT,
15-WEGLA,
6-

WRITTEN HISTORIGAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, DC 20013-7127

HAER
MONT,
15-WEGLA,
6-

HISTORIC AMERICAN ENGINEERING RECORD

GRANITE GREEK CULVERT
HAER MT-77

Location: Spanning Granite (Alder) Creek, on Going-to-the-Sun Road, approximately twenty-six miles northeast of the park entrance at West Clacier, Glacier National Park, Flathead County, Montana
UTM: Mount Cannon Quad. 12/295030/5402090

Date of Construction: 1926

Structural Type: Arched concrete culvert

Contractor: Williams & Douglas, Tacoma, Washington

Engineer: Bureau of Public Roads

Owner: Glacier National Park

Use: Road culvert

Significance: The Granite Creek Culvert is one of approximately seventeen prominent masonry and concrete structures on Going-to-the-Sun Road in Glacier National Park. The 51-mile stretch of scenic road is significant as a unique engineering accomplishment of the early twentieth century, and as the first product of a 1925 cooperative agreement between the National Park Service and the Bureau of Public Roads. As with other structures on the road, the designers of the Granite Greek Culvert used a masonry arch facade in an attempt to make it blend with the park scenery.

Project Information: Documentation of the Granite Creek Culvert is part of the Going-to-the-Sun Road Recording Project, conducted during the summer of 1990 under the co-sponsorship of HABS/HAER and Glacier National Park. Researched and written by Kathryn Steen, HAER Historian, 1990. Edited and transmitted by Lola Bennett, HAER Historian, 1992.

Going-to-the-Sun Road

The Granite Creek culvert and retaining wall carry the traffic of Going-to-the-Sun Road over Granite Creek (also known as Alder Creek). Going-to-the-Sun Road is a scenic park road that winds through the spectacular mountains and valleys in the middle of Glacier National Park. The 51-mile road, built in sections between 1911 and 1933, and rebuilt during the next two decades, runs east and west through the park. Starting in the west, the road runs from West Glacier, along the 10-mile eastern shore of Lake McDonald and then up McDonald Creek for an additional ten miles. About one mile beyond the junction with Logan Creek, the road begins its ascent to Logan Pass. The road climbs at a 6-percent grade, passes through a tunnel, and turns at a major switchback called "The Loop." Following the contours of the sides of Haystack Butte and Pollock Mountain, the road passes over several bridges, culverts, and retaining walls before reaching Logan Pass. The road descends to the east along the sides of Piegan Mountain and Going-to-the-Sun Mountain before running along the north shore of St. Mary Lake. The road exits the park as it crosses Divide Creek near St. Mary, Montana.[1]

Significance of the Road

Going-to-the-Sun Road is significant as an outstanding engineering feat of the early twentieth century. In addition, the road was the first product of the interagency cooperative agreement between the National Park Service (NPS) and the Bureau of Public Roads (BPR). The agreement, signed in 1925, allowed the National Park Service to utilize the roadbuilding expertise of the Bureau of Public Roads while still retaining control to protect the landscape.[2]

Granite Creek Culvert

In 1925, Glacier National Park signed a $900,000 contract with the construction firm of D.A. Williams and A.R. Douglas of Tacoma, Washington, to build a twelve-mile section on Going-to-the-Sun Road. The section ran from 1½ miles west of Logan Creek up to Logan Pass. The contractors worked on the road for four seasons and completed the project in October, 1928. There were several structures along Williams and Douglas' section of road, including the Logan Creek Bridge, the West Side Tunnel, the Triple Arches, and the Haystack Creek Culvert, in addition to the Granite Creek Culvert. Williams and Douglas built the culvert and retaining wall in 1926, making it one of the oldest structures on the road.[3]

At Granite Creek, the topography required the contractors to construct a retaining wall to support the full width of the road, as well as the culvert for the creek. In the case of the Granite Creek structure, the retaining wall is a more imposing and noticeable structure than the small arched culvert at the base of the wall. Williams and Douglas built several retaining walls to hold the road to the mountainsides. W.G. Peters, the Bureau of Public Roads' resident engineer supervising the Williams and Douglas contract, estimated that the contractors built 7242 linear feet of retaining wall, containing 8708

cubic yards of material. To insure stability, most of the retaining walls were built with a triangular cross section with the base equalling one-half the height of the wall. The walls typically sloped with a rise-to-run ratio of 10:1 on the exterior of the retaining wall and a ratio of 4:1 on the interior. At road level, the wall was 1'-8" wide. Very few of Williams and Douglas' retaining walls, particularly those on straight sections of road, exceeded 11' in height because of the base-to-height ratio. The Granite Creek culvert and retaining wall is located on a curve in the road, and the added strength gained in a curve allows the wall to exceed a height of 11'.[4]

In the BPR-NPS agreement just prior to the Williams and Douglas contract, the NPS officials took particular care to insure the road and its structures would fit into the surrounding environment. The BPR and NPS planners wrote this landscape principle into the specifications of Williams and Douglas' contract. In particular, the specifications required the contractor to use construction materials native to the park. As a result, Williams and Douglas constructed the culvert and retaining wall to display only the stone found in Glacier National Park. Most of the rock use in the masonry work came from cliff excavation along the road.[5]

Description

The retaining wall appears to be about 15' to 20' tall, with the arch making up about one-third of that distance. Most of the culverts on the Williams and Douglas' contract were reinforced concrete slabs with masonry facades. The Cranite Creek culvert is most likely of similar construction, but it may also be like the Triple Arches, which contains true arches. The Cranite Creek arch is more vertically elongated than arches such as found at Haystack Creek or the Triple Arches. The keystone is red, while most of the stones are a buff limestone.

ENDNOTES

1. See the Historic American Engineering Record report HAER MT-67 on the Coing-to-the-Sun Road.

2. C.H. Purcell, F.A. Kittredge, J.A. Elliott, T.G. Vint, and C.J. Kraebel, Suggested Procedure for Cooperation Between the National Park Service and the Bureau of Public Roads in Major Traffic-Way Projects Within the National Parks, April 22, 1925 (Record Croup 79, National Archives, Washington, D.C.)

3. W.G. Peters, "The Transmountain Highway, Clacier National Park," Western Construction News (August 10, 1929), pp. 395, 401; Peters, "Monthly Progress Report, October 1926" (Glacier National Park Library Historical Files).

4. Peters, "The Transmountain Highway," p. 398.

5. Purcell, et. al., Suggested Procedure; "Special Features" section of Williams & Douglas' contract (Record Group 79, National Archives).

BIBLIOGRAPHY

Historic American Engineering Record. "HAER MT-67: Going-to-the-Sun Road." (Library of Congress, Washington, D.C.)

Peters, W.G. "Monthly Progress Report, October 1926." (Glacier National Park Library Historical Files).

Peters, W.G. "The Transmountain Highway, Glacier National Park," Western Construction News (August 10, 1929), pp. 394-401.

Purcell, C.H., F.A. Kittredge, J.A. Elliott, T.C. Vint, and C.J. Kraebel. Suggested Procedure for Cooperation Between the National Park Service and the Bureau of Public Roads in Major Traffic-Way Projects Within the National Parks. April 22, 1925 (Record Group 79, National Archives, Washington, D.C.)

"Special Features" section of Williams & Douglas' contract. (Record Group 79, National Archives, Washington, D.C.)